

AWARD/CONTRACT	
1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)	
RATING	
PAGE OF PAGES 1 30	
2. CONTRACT (Proc. Inst. Ident.) NO. HR0011-07-G-0012	
3. EFFECTIVE DATE 13 DEC 06	
4. REQUISITION/PURCHASE REQUEST/PROJECT NO. SEE SCHEDULE	
5. ISSUED BY DARPA ATTN: (b)(6) 3701 N. FAIRFAX DRIVE ARLINGTON VA 22203-1714	
CODE HR0011	
6. ADMINISTERED BY (If other than item 5) DOMA NORTHERN CALIFORNIA 700 EAST ROTH ROAD BLDG 800 FRENCH CAMP CA 95331-0222	
CODE 80807A	
7. NAME AND ADDRESS OF CONTRACTOR (Name, street, city, country, state and zip code) SHAKTI TECHNOLOGIES 720 GARLAND DR PALO ALTO CA 94308-3026	
8. DELIVERY [] FOB ORIGIN [X] OTHER (See below)	
9. DISCOUNT FOR PROMPT PAYMENT	
10. SUBMIT INVOICES 1 ITEM Section G (if copies unless otherwise specified) TO THE ADDRESSES SHOWN IN:	
11. SHIP TO/MARK FOR CODE FACILITY CODE See Schedule	
12. PAYMENT WILL BE MADE BY DPAS COLUMBUS CENTER WEST ENTITLEMENT OPERATIONS P.O. BOX 182881 COLUMBUS OH 43218-2881	
CODE HC033B	
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: [] 10 U.S.C. 2304(c) [] 41 U.S.C. 253(c)	
14. ACCOUNTING AND APPROPRIATION DATA See Schedule	
15A. ITEM NO.	
15B. SUPPLIES/SERVICES	
15C. QUANTITY	
15D. UNIT	
15E. UNIT PRICE	
15F. AMOUNT	
SEE SCHEDULE	
15G. TOTAL AMOUNT OF CONTRACT \$1,169,806.00	
(X) SEC. DESCRIPTION PAGE(S) (X) SEC. DESCRIPTION PAGE(S)	
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CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE	
17. [X] CONTRACTOR'S NEGOTIATED AGREEMENT Contractor is required to sign this document and return it to issuing office. Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed below.)	
18. [] AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number _____ Including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award constitutes the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/document. No further contractual document is necessary.	
19A. NAME AND TITLE OF SIGNER (Type or print) SUBHASH NARANG, PRESIDENT AND CEO.	
19B. NAME OF CONTRACTOR SHAKTI TECHNOLOGIES, INC.	
19C. DATE SIGNED 12/12/2006	
BY Signature of person authorized to sign	
20A. NAME AND TITLE OF CONTRACTING OFFICER TEL: 571-218-4639 FAX: (b)(6)	
20B. UNCLASSIFIED BY: (b)(6)	
20C. DATE SIGNED 13 DEC 06	

Section B - Supplies or Services and Prices

ITEM NO	SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	TOTAL EST. COST PLUS FIXED FEE
0001	BASE Effort	\$1,090,728.00	\$79,078.00	\$1,169,806.00
	The contractor shall complete the Base Effort as described in its proposal entitled "Development of Numerical Models for Studying the Performance of Topologically Controlled Lightweight Armor Systems" and as specified in accordance with the requirements set forth in this contract.			

ITEM NO	AMOUNT
000101	Funding for CLIN 0001
	AO No. W064/00
	ACRN AA
	\$575,000.00

ITEM NO	AMOUNT
000102	Funding for CLIN 0001
	AO No. W064/01
	ACRN AB
	\$594,806.00

ITEM NO	SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	TOTAL EST. COST PLUS FIXED FEE
0002	OPTION 1 Effort	\$3,070,736.00	\$222,628.00	\$3,293,364.00
	The contractor shall complete the Option 1 Effort as described in its proposal entitled "Development of Numerical Models for Studying the Performance of Topologically Controlled Lightweight Armor Systems" and as specified in accordance with the requirements set forth in this contract.			

ITEM NO	AMOUNT
000201	Funding for CLIN 0002

ITEM NO	SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	TOTAL EST. COST PLUS FIXED FEE
0003	Reports and Deliverables	\$0.00	\$0.00	\$0.00
	The contractor shall provide the Reports and Deliverables for the Base Effort (CLIN 0001), and for the OPTION 1 Effort (CLIN 0002), if and to the extent exercised by the government, in support of the "Development of Numerical Models for Studying the Performance of Topologically Controlled Lightweight Armor Systems" program.			NSP

Section C - Descriptions and Specifications

CLAUSES INCORPORATED BY FULL TEXT

C-1 Scope of Work

(a) The Contractor shall furnish the necessary personnel, materials, facilities and other services as may be required to perform Contract Line Item Number (CLIN) 0001 and 0003 in accordance with the Statement of Work, Attachment 1 hereto, and as specified in the Contractor's proposal entitled "Development of Numerical Models for Studying the Performance of Topologically Controlled Lightweight Armor Systems", dated 21 AUG 06 and as revised on 12 SEP 06, copies of which are in possession of both parties.

(b) The Contractor shall furnish the necessary personnel, materials, facilities, and other services as may be required to perform Contract Line Item Number (CLIN) 0002, if, and to the extent, exercised by the government.

(c) In the event of an inconsistency between the provisions of this contract and the Contractor's proposal, the inconsistency shall be resolved by giving precedence in the following order: (1) the contract, (2) the attachments to the contract, and then (3) the Contractor's proposal.

C-2 Reports and Other Deliverables

(a) The Contractor shall submit the following reports and other deliverables in accordance with the delivery schedule set forth in Section F. Reports and other deliverables shall be submitted in writing, as defined in FAR 2.101, or as specified below:

(1) MONTHLY R&D STATUS REPORT

These reports will contain the following:

- (i) For first report only; the date work actually started.
- (ii) Description of progress during the reporting period, supported by reasons for any change in approach reported previously
- (iii) Planned activities and milestones for the next reporting period.
- (iv) Description of any major items of experimental or special equipment purchased or constructed during the reporting period.
- (v) Notification of any changes in key personnel associated with the contract during the reporting period.
- (vi) Summary of substantive information derived from noteworthy trips, meetings, and special conferences held in connection with the contract during the reporting period.
- (vii) Summary of all problems or areas of concern.
- (viii) Related accomplishments since last report.
- (ix) Fiscal status, to include reporting of summary level financial data in the following format:
(next page)

**MONTHLY R&D STATUS REPORT
PROGRAM FINANCIAL STATUS**

Work Breakdown		Cumulative to Date			At Completion	
Structure or Task Element	Planned Expend	Actual Expend	% Budget Compl	At Compl	Latest Revised Estimate	Remarks
<hr/>						
Subtotal: <hr/>						
Management Reserve: <hr/>						
Or <hr/>						
Unallocated Resources: <hr/>						
<hr/>						
TOTAL: <hr/>						
<hr/>						

Note: Budget at completion changes only with the amount of any scope changes. (Not affected by underrun or overrun)

Based on currently authorized work:

Is current funding sufficient for the current fiscal year (FY)? (Explain in narrative if "NO")

YES NO

What is the next FY funding requirement at current anticipated levels?

\$

Have you included in the report narrative any explanation of the above data and are they cross-referenced?

YES NO

(2) DEVELOPMENT OF NUMERICAL MODELS FOR STUDYING THE PERFORMANCE OF TOPOLOGICALLY CONTROLLED LIGHTWEIGHT ARMOR SYSTEMS

BASE PERIOD OF PERFORMANCE

- (a) FEA results obtained from computer simulations, capturing a range of auxetic behavior of thin plate structure subjected to quasi-static loading
- (b) A 3-D FEA model that includes a three layered composite armor and steel frame components under blast loading conditions

-
- (c) Final Phase 1 report and electronic version of the final report and project summary

OPTION PERIOD OF PERFORMANCE

- (a) Detailed report on the processing methods for the production of metal-coated ceramic powders and coated ceramic flakes.

- (b) Finite element analysis armor model calibrated through iterative interaction with armor design and ballistic test results

-
- (c) Report detailing tested ballistic resistance of the armor system with areal density $<1/3$ RHA against AP rounds.

-
- (d) Report detailing tested ballistic resistance of the armor system with areal density $<1/3$ RHA against 0.5 cal FSP rounds

- (e) Deliver three 8-in x 8-in. armor plates with areal density

- (f) Deliver three 18-in x 18-in. armor plates with areal density

(3) FINAL REPORT

This report shall document the results of the complete effort and should be delivered at the completion of the contract. If the Government chooses to exercise the options under this contract, the due date for the final report is extended accordingly. Title pages shall include a disclaimer worded substantially as follows:

"The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the Defense Advanced Research Projects Agency or the U.S. Government."

The Final Technical Report summary shall include:

- Task Objectives
 - Technical Problems
 - General Methodology (i.e., literature review, laboratory experiments, surveys, etc.)
 - Technical Results
 - Important Findings and Conclusions
 - Significant Hardware Development
 - Special Comments
 - Implications for Further Research
- Standard Form 298, September 1988

- (b) Reports delivered by the Contractor in the performance of the contract shall be considered "Technical Data" as defined in Section I contract clauses entitled "Rights in Technical Data - Noncommercial Items" and "Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation."

(c) Bulky Reports shall be mailed by other than first-class mail unless the urgency of submission requires use of first-class mail. In this situation, one copy shall be mailed first-class and the remaining copies forwarded by less than first-class.

(d) All papers and articles published as a result of DARPA sponsored research shall include a statement reflecting the sponsorship. In addition, a bibliography of the titles and authors of all such papers are to be included in the Final Technical Report

(1) The cover or title page of each of the above reports or publications prepared, will have the following citation:

Sponsored by
Defense Advanced Research Projects Agency (DARPA)
Defense Sciences Office (DSO)
Program: Topologically Controlled Lightweight Armor
ARPA Order No. W064/00 and W064/01, Program Code: 7620
Issued by DARPA/CMO under Contract No. HR0011-07-C-0012

(2) The title page shall include a disclaimer worded substantially as follows:

~~"The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the Defense~~
Advanced Research Projects Agency or the U.S. Government."

(3) All technical reports must (i) be prepared in accordance with American National Standards Institute (ANSI) Standard Z39.18, and (ii) be marked with an appropriate Distribution Statement. The Final Technical Report will include a Standard Form 298.

Section D - Packaging and Marking

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D-1 Packaging and Marking

(a) All items shall be preserved, packaged, packed and marked in accordance with best commercial practices to meet the packing requirements of the carrier, and to ensure safe delivery at destination.
(end of clause)

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at: Destination by the government

CLAUSES INCORPORATED BY REFERENCE

52.246-8	Inspection Of Research And Development Cost Reimbursement	MAY 2001
252.246-7000	Material Inspection And Receiving Report	MAR 2003

Section F - Deliveries or Performance

CLAUSES INCORPORATED BY REFERENCE

52.247-34

F.O.B. Destination

NOV 1991

CLAUSES INCORPORATED BY FULL TEXT

F-1 Term of Contract

- (a) The period of performance for the BASE Effort, as set forth in CLIN 0001 and 0003, shall be from the effective date of the contract and continues through twelve (12) months thereafter.
- (b) The period of performance for Option 1, as set forth in CLIN 0002 and 0003, shall be from the effective date of the option exercise and continues through eighteen (18) months thereafter.

F-2 Reports and Other Deliverables

- (a) Delivery of all reports and other deliverables shall be made to the addressee specified in F-3 entitled "Report Distribution" in accordance with the following:

Item No.	Description	Due Date (on or before)
(1)	Monthly R&D Status Reports (NOTE: This report will discuss both Technical and Financial Status as indicated in SECTION C of the contract)	10 days following the end of each month
(2)	Development of Numerical Models For Studying the Performance of Topologically Controlled Lightweight Armor Systems	To be delivered to government at conclusion of the period of performance of this contract, or as otherwise agreed to by the parties
(3)	Final Report	On last day of the period of performance
(4)	OTHER	As mutually agreed to between the parties

F-3 Report Distribution

(a) DARPA/CMO

Attn: Anthony E. Cicala, Contracting Officer
 3701 North Fairfax Drive
 Arlington, VA 22203-1714
 Phone: (571)218-4639
 FAX: (703)248-1927
 Email: anthony.cicala@darpa.mil
 (one copy each report)

(b) DARPA/DSO
 Attn: Leo Christodoulou, Program Manager
 3701 North Fairfax Drive
 Arlington, VA 22203-1714
 Phone: (703)696-2374
 FAX: (703)741-1368
 Email: leo.christodoulou@darpa.mil
 (one copy each report)

(c) DARPA/DSO
 Attn: Riva Meade, Assistant Director for Program Management (ADPM)
 3701 North Fairfax Drive
 Arlington, VA 22203-1714
 Phone: (703)696-2217
 FAX: (703)807-1738
 Email: riva.meade@darpa.mil
 (one copy each report)

(d) DCMA Northern California
 Attn: Michele Vaughn, Administrative Contracting Officer (ACO)
 P.O. Box 232
 700 East Roth Road, Bldg. 330 (Lathrop, CA)
 French Camp, CA 95231-0232
 Phone: (209)941-7016
 FAX: (209)941-7013
 Email: michele.vaughn@dcma.mil
 (one copy each report)

(e) U.S. Army Research Laboratory
 Attn: Michael Maher (AMSRD-ARL-WM-MC)
 4600 Deer Creek Loop
 Aberdeen Proving Ground, MD 21005-5069
 Phone: (410)306-0769
 FAX: (410)306-0829
 Email: mmaher@arl.army.mil
 (one copy each report)

(f) DARPA/Library
 3701 North Fairfax Drive
 Arlington, VA 22203-1714
 Email: library@darpa.mil
 (one copy of the Final Technical Report)

(g) Defense Technical Information Center

(1) Email: TR@dtic.mil
 (one electronic copy of the Final Technical Report, if unclassified)

OR

(2) Attn: DTIC-BCS
 8725 John J. Kingman Road, Suite 0944
 Fort Belvoir, VA 22060-0944
 (two hard copies of the Final Technical Report if unclassified)

F-4 Notice Regarding Late Delivery

(a) In the event the Contractor anticipates difficulty in complying with the contract delivery schedule, the Contractor shall immediately notify the Contracting Officer in writing, giving pertinent details, including the date by which it expects to make delivery; PROVIDED, however, that this date shall be informational only in character and the receipt thereof shall not be construed as a waiver by the Government of any contract delivery schedule, or any rights or remedies provided by law or under this contract.

Section G - Contract Administration Data

ACCOUNTING AND APPROPRIATION DATA

AA: 9760400 1320 W064 P6620 2525 DPAC 6 5255 S12136 62715E
AMOUNT: \$575,000.00
CIN 00000000000000000000000000000000: \$575,000.00

AB: 9770400 1320 W064 P7620 2525 DPAC 7 5057 S12136 62715E
AMOUNT: \$594,806.00
CIN 00000000000000000000000000000000: \$594,806.00

CLAUSES INCORPORATED BY FULL TEXT

G-1 Procuring Office Representative

(a) The Procuring Office Representative is Anthony E. Cicala, DARPA/CMO, 3701 North Fairfax Drive, Arlington, VA 22203-1714, Phone: (571)218-4639, FAX: (703)248-1927, Email: anthony.cicala@darpa.mil.

G-2 Electronic Submission of Payment Requests

(a) A Cost Voucher identified by contract number shall be submitted for payment directly via the Internet to Wide Area Workflow Receipt and Acceptance at <https://wawf.eb.mil>

(b) Final cost vouchers shall be submitted for review and approval to DCAA:

Defense Contract Audit Agency (DCAA)
 Peninsula Branch Office
 Attn: Christopher Trier, Supervisory Auditor
 480 San Antonio Road, Suite 150
 Mountain View, CA 94040
 Phone: (650)917-5004
 FAX: (650)917-5050
 Email: christopher.trier@dcaa.mil

G-3 Delegation of Authority for Contract Administration

(a) DCMA Northern California, is hereby designated as the Contracting Officer's authorized representative for administering this contract in accordance with current directives.

G-4 Contracting Officer's Representative (COR)

(a) Performance of work under this contract shall be subject to the technical direction of Michael Maher, U.S. Army Research Laboratory, 4600 Deer Creek Loop, Aberdeen Proving Ground, MD 21005-5069, Phone: (410)306-0769, FAX: (410)306-0829, Email: mmaher@arl.army.mil. Such technical direction includes those instructions to the Contractor necessary to accomplish the Statement of Work. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the

Government. The COR does not have the authority to alter the Contractor's obligations or to change the specifications of the contract.

(b) Technical direction shall not include any direction which:

- (1) Constitutes additional work outside the scope of work;
- (2) Constitutes a change as defined in Section I contract clause entitled "Changes";
- ~~(3) In any manner causes an increase or decrease in the total estimated cost or the time required for contract performance; or~~
- (4) Changes any of the stated terms, conditions, or specifications of the contract.

G-5 Payment Instructions for Multiple Accounting Classification Citations

(a) Payments under contract line items funded by multiple accounting classification citations shall be made from the earliest available fiscal year funding sources.

G-6 Payment of Cost and Fee

(a) As consideration for the proper performance of work required under this contract, the Contractor shall be paid as follows:

- (1) Costs, as provided for under Section I contract clause titled "Allowable Cost and Payment" not to exceed the amount set forth as "Total Estimated Cost" in Section B, and subject further to those Section I clauses entitled "Limitation of Cost" or "Limitation of Funds".
- (2) A fixed fee in the amount set forth as "Fixed Fee" in Section B, in accordance with the Section I contract clause entitled "Fixed Fee". The Contractor may bill on each invoice the amount of the fixed fee bearing the same percentage to the total fixed fee as the amount of cost billed bears to the total estimated cost.

Section H - Special Contract Requirements

CLAUSES INCORPORATED BY FULL TEXT

H-1 Contracting Officer

- (a) Notwithstanding any other provision of this contract, the Contracting Officer is the only individual authorized to redirect the effort or in any way amend or modify any of the terms of this contract. If, as a result of ~~technical discussions, it is desirable to alter contract obligations or statement of work, a modification must be~~ issued in writing and signed by the Contracting Officer.

H-2 Type of Contract

- (a) This is a Cost Plus Fixed Fee, Completion Type contract.

H-3 Public Release or Dissemination of Information

- (a) There shall be no dissemination or publication, except within and between the Contractor and any ~~subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant~~ to this contract without prior written approval of the COR. All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor. Papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.

- (b) When submitting material for clearance for open publication, the Contractor must furnish DARPA Technical Information Officer, 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (703) 526-4163 with five copies and allow four weeks for processing. Viewgraph presentations must be accompanied with a written text. Whenever a paper is to be presented at a meeting, the Contractor must indicate the exact dates of the meeting or the Contractor's date deadline for submitting the material.

H-4 Key Personnel

- (a) The Contractor shall notify the Contracting Officer prior to making any change in key personnel. Key personnel are defined as follows:
- (1) Personnel identified in the proposal as key individuals to be assigned for participation in the performance of the contract;
 - (2) Personnel whose resumes were submitted with the proposal; or
 - (3) Individuals who are designated as key personnel by agreement of the Government and the Contractor during negotiations.
- (b) The Contractor must demonstrate that the qualifications of the prospective personnel are equal to or better than the qualifications of the personnel being replaced. Notwithstanding any of the foregoing provisions, key personnel shall be furnished unless the Contractor has demonstrated to the satisfaction of the COR that the qualifications of the proposed substitute personnel are equal to or better than the qualifications of the personnel being replaced.

H-5 Restrictions on Printing

(a) Unless otherwise authorized in writing by the Contracting Officer, reports, data, or other written material produced using funds provided by this contract and submitted hereunder shall be reproduced only by duplicating processes and shall not exceed 5,000 single page reports or a total of 25,000 pages of a multiple-page report. These restrictions do not preclude the writing, editing, preparation of manuscript or reproducible copy of related illustrative materials if required as part of this contract, or incidental printing such as forms or materials necessary to be used by the Contractor to respond to the terms of the contract.

H-6 Contractor Representations and Certifications

(a) The Contractor's Representations and Certifications dated 9 OCT 06 are incorporated herein by reference.

H-7 Insurance Schedule

(a) The Contractor shall maintain the types of insurance listed in FAR 28.307-2 (a), (b) and (c), with the minimum amounts of liability indicated therein. The types of insurance coverage listed in paragraphs (d) and (e) shall also be maintained when applicable.

H-8 Travel

(a) Reimbursement for travel-related expenses shall be in accordance with the Contractor's approved travel policy. The Federal Travel Regulations, Joint Travel Regulations (JTR), and Standardized Regulations as stated in FAR 31.205-46 will be used as a guide in determining reasonableness of per diem costs. Costs for travel shall be allowable subject to the provisions of FAR 31.205-46.

(b) In connection with direct charge to the contract of travel-related expenses, the Contractor shall hold travel to the minimum required to meet the objectives of the contract, and substantial deviations (defined for purposes of this contract as an increase of greater than 50 percent of authorized travel costs) from the amount of travel agreed to during contract negotiation shall not be made without the authorization of the Contracting Officer.

When applicable, the Contractor shall notify the COR of proposed travel of an employee beyond that agreed to during negotiations.

(c) Approval of the Contracting Officer shall be obtained in advance for attendance by personnel at training courses, seminars, and other meetings not directly related to contract performance if the costs for the courses, seminars, and other meetings are charged to the contract.

(d) All foreign travel shall be authorized and approved in advance, in writing, by the Contracting Officer. Request for such travel must be submitted to the Contracting Officer at least forty-five (45) days in advance of traveler's anticipated departure date, and shall include traveler's itinerary of United States Flag Air Carriers.

H-9 Metric System

(a) The Defense Advanced Research Projects Agency (DARPA) will consider the use of the metric system in all of its activities consistent with operational, economical, technical and safety requirements.

(b) The metric system will be considered for use in all new designs. When it is deemed not to be in the best interest of the DoD to provide metric design, justification shall be provided.

(c) Physical and operational interfaces between metric items and U.S. customary items will be designed to assure that interchangeability and interoperability will not be affected.

(d) Existing designs dimensioned in U.S. customary units will be converted to metric units only if determined to be necessary or advantageous. Unnecessary retrofit of existing systems with new metric components will be avoided where both the new metric and existing units are interchangeable and interoperable. Normally, the system of measurement in which an item is originally designed will be retained for the life of the item.

(e) During the metric transition phase hybrid metric and U.S. customary designs will be necessary and acceptable. ~~Material components, parts, subassemblies, and semi-fabricated material, which are of adequate or~~ when it is otherwise specifically determined to be in the best interest of the Department of Defense. Bulk materials will be specified and accepted in metric units when it is expedient or economical to do so.

(f) Technical reports, studies, and position papers, (except those pertaining to items dimensioned in U.S. customary units) will include metric units of measurement in addition to or in lieu of U.S. customary units. With respect to existing contracts, this requirement applies only if such documentation can be obtained without an increase in contract costs.

(g) Use of the dual dimensions (i.e., both metric and U.S. customary dimensions) on drawings will be avoided unless it is determined in specific instances that such usage will be beneficial. However, the use of tables on the document to translate dimensions from one system of measurement to the other is acceptable.

H-10 Consent to Subcontract

(a) Pursuant to the clause of the General Provisions entitled "Subcontracts (AUG 1998)," FAR 52.244-2, the Contracting Officer hereby consents to the placement of subcontract(s) with the following firm(s)/consultant(s) at the ceiling amounts specified:

NAME	BASE Period	OPTION Period (If Exercised)	TOTAL AMOUNT
<u>SRI International</u>	<u>\$535,022.00</u>	<u>\$1,707,570.00</u>	<u>\$2,242,592.00</u>
<u>Univeristy of Florida</u>	<u>\$170,000.00</u>	<u>\$432,854.00</u>	<u>\$602,854.00</u>

(b) Approval must be obtained from the Administrative Contracting Officer to increase the use or number of subcontractors from the level established in subparagraph (a).

H-11 Pre-contract Costs

(a) The extent of allowability of costs incurred by the Contractor prior to the effective date of the contract shall be governed by the advance agreement listed in Section J as Attachment 2.

H-12 Small Business Subcontracting Plan and Goals

(a) The Contractor's Small Business Subcontracting Plan, dated N/A, is incorporated herein and made a part of this contract by reference.

H-13 Government Furnished Property/Facilities and Services

(a) In accordance with the Section I contract clause entitled "Government Property (Cost Reimbursement, Time and Material, or Labor-Hour Contracts)", the following property, facilities and/or services shall be provided for use in the performance of this contract.

<u>Need Date</u>	<u>QTY</u>	<u>PROPERTY NOMENCLATURE</u>	<u>DELIVERY TO</u>
N/A	N/A	N/A	N/A

H-14 Contractor-Acquired Property (Facilities)

~~(a) The Contractor is authorized to acquire the following items of facilities which are needed to accomplish this contract:~~

<u>Items To Be Acquired</u>	<u>Estimated Cost</u>
N/A	N/A
Total	N/A

~~(b) The costs incurred by the Contractor in acquiring the facilities listed in paragraph (a) above shall be considered allowable costs under the contract provided that the total net amount of the facilities does not exceed \$N/A. The Contractor shall have no obligation to acquire facilities and the Government shall have no obligation to reimburse any amount for facilities in excess of the amount set forth above unless the contract is amended to increase this amount.~~

(c) The facilities listed above shall be considered Government Property and shall be subject to the provisions of FAR 52.245-05, incorporated by reference in Section I.

(d) The Contractor shall not use Contractor-acquired property listed above for work other than that performed pursuant to this contract unless so authorized in writing by the Contracting Officer.

H-15 Contractor-Acquired Property (Special Test Equipment)

(a) The Contractor is authorized to acquire the following items of special test equipment which are needed to accomplish this contract:

<u>Items To Be Acquired</u>	<u>Estimated Cost</u>
N/A	N/A
Total	N/A

(b) The costs incurred by the Contractor in acquiring the special test equipment listed in paragraph (a) above shall be considered allowable costs under the contract provided that the total net amount of the special test equipment does not exceed \$N/A. The Contractor shall have no obligation to acquire special test equipment and the Government shall have no obligation to reimburse any amount for special test equipment in excess of the amount set forth above unless the contract is amended to increase this amount.

(c) The special test equipment listed above shall be considered Government Property and shall be subject to the provisions of FAR 52.245-05, incorporated by reference in Section I.

(d) The Contractor shall not use Contractor-acquired property listed above for work other than that performed pursuant to this contract unless so authorized in writing by the Contracting Officer.

H-16 Contractor-Acquired Property (Special Tooling)

(a) The Contractor is authorized to acquire the following items of special tooling which are needed to accomplish this contract:

Items To Be Acquired

N/A

Estimated Cost

N/A

TotalN/A

(b) The costs incurred by the Contractor in acquiring the special tooling listed in paragraph (a) above shall be considered allowable costs under the contract provided that the total net amount of the special tooling does not exceed \$N/A. The Contractor shall have no obligation to acquire special tooling and the Government shall have no obligation to reimburse any amount for special tooling in excess of the amount set forth above unless the contract is amended to increase this amount.

(c) The special tooling listed above shall be considered Government Property and shall be subject to the provisions of FAR 52.245-05, incorporated by reference in Section I.

(d) The Contractor shall not use Contractor-acquired property listed above for work other than that performed pursuant to this contract unless so authorized in writing by the Contracting Officer.

H-17 Contractor Acquired Property (IT)

(a) Performance of this contract will require use of the information technology (IT) resources listed below, acquisition of which (or equivalent) is hereby authorized:

ITEM

N/A

TOTAL AMOUNT

N/A

(b) The costs incurred by the Contractor in acquiring the IT listed in paragraph (1.) above shall be considered allowable costs under the contract provided that the total net amount of the IT does not exceed \$N/A. The Contractor shall have no obligation to acquire IT and the Government shall have no obligation to reimburse any amount for IT in excess of the amount set forth above unless the contract is modified to increase this amount.

(c) The IT resources listed above shall be considered Government Property and shall be subject to the provisions of FAR 52.245-5, incorporated in Section I.

(d) The Contractor shall not use Contractor acquired property listed above for work other than that performed pursuant to this contract unless so authorized in writing by the Contracting Officer.

(e) This authorization is subject to the Contractor's compliance with the approvals and screening requirements set forth in DFARS Subpart 239.73 and DoD 7950.1-M, "Defense Automation Resources Management Manual."

(1) Use of the DD Form 1851 for determining availability of excess information technology (IT) is only required for IT with a unit acquisition cost of \$_____ and above.

(2) On-line screening for excess IT, regardless of cost, via remote terminal dial-up, is available to contractors through their Administrative Contracting Officers.

H-18 Proprietary Technical Data and Computer Software

(a) Any deliverable technical data or computer software developed or generated at private expense and considered to be proprietary by the Contractor or subcontractors shall be delivered in accordance with DFARS 252.227-7013 and 252.227-7014. A list of such data and/or software is incorporated into the contract as Attachment No. N/A.

H-19 Consultants

(a) The contractor is authorized to use the following consultants to the extent indicated:

<u>Name</u>	<u>No. of Hours</u>	<u>Rate</u>	<u>Total Amount</u>
N/A	N/A	N/A	N/A

(b) Approval must be obtained from the Administrative Contracting Officer to increase the use of consultants from the level estimated in subparagraph (a).

H-20 Title to Equipment (Nonprofit Institutions of Higher Education and Nonprofit Organizations)

(a) In accordance with FAR 35.014, "Government property and title", title to all equipment purchased with ~~funds available for research under this contract shall vest in the acquiring nonprofit institution, namely N/A, upon~~ acquisition without further obligation to the Government. The equipment shall be used for the conduct of basic or applied scientific research.

Section I - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	SEP 2005
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	SEP 2006
52.215-15	Pension Adjustments and Asset Reversions	OCT 2004
52.215-17	Waiver of Facilities Capital Cost of Money	OCT 1997
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions	JUL 2005
52.216-7	Allowable Cost And Payment	DEC 2002
52.216-8	Fixed Fee	MAR 1997
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.219-9	Small Business Subcontracting Plan	SEP 2006
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.222-3	Convict Labor	JUN 2003
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	APR 2002
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-39	Notification of Employee Rights Concerning Payment of Union Dues or Fees	DEC 2004
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.225-13	Restrictions on Certain Foreign Purchases	FEB 2006
52.226-1	Utilization Of Indian Organizations And Indian-Owned Economic Enterprises	JUN 2000
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	AUG 1996
52.228-7	Insurance--Liability To Third Persons	MAR 1996
52.232-9	Limitation On Withholding Of Payments	APR 1984
52.232-20	Limitation Of Cost	APR 1984
52.232-22	Limitation Of Funds	APR 1984
52.232-23 Alt I	Assignment of Claims (Jan 1986) - Alternate I	APR 1984
52.232-25	Prompt Payment	OCT 2003
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3 Alt I	Protest After Award (Aug 1996) - Alternate I	JUN 1985

52.242-1	Notice of Intent to Disallow Costs	APR 1984
52.242-3	Penalties for Unallowable Costs	MAY 2001
52.242-4	Certification of Final Indirect Costs	JAN 1997
52.242-13	Bankruptcy	JUL 1995
52.243-2 Alt V	Changes--Cost-Reimbursement (Aug 1987) - Alternate V	APR 1984
52.244-6	Subcontracts for Commercial Items	SEP 2006
52.245-5 Dev	Government Property (Cost-Reimbursement, Time-and-Material, or Labor-Hour Contracts) Deviation	MAY 2004
52.245-9	Use And Charges	AUG 2005
52.249-6	Termination (Cost Reimbursement)	MAY 2004
52.249-14	Excusable Delays	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2004
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7004 Alt A	Central Contractor Registration (52.204-7) Alternate A	NOV 2003
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	MAR 1998
252.219-7003	Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DOD Contracts)	APR 1996
252.225-7012	Preference For Certain Domestic Commodities	JUN 2004
252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns	SEP 2004
252.225-7013	Rights in Technical Data-Noncommercial Items	NOV 1995
252.227-7014	Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation	JUN 1995
252.227-7015	Technical Data--Commercial Items	NOV 1995
252.227-7016	Rights in Bid or Proposal Information	JUN 1995
252.227-7019	Validation of Asserted Restrictions--Computer Software	JUN 1995
252.227-7027	Deferred Ordering Of Technical Data Or Computer Software	APR 1988
252.227-7037	Validation of Restrictive Markings on Technical Data	SEP 1999
252.232-7003	Electronic Submission of Payment Requests	MAY 2006
252.232-7010	Levies on Contract Payments	SEP 2005
252.235-7010	Acknowledgment of Support and Disclaimer	MAY 1995
252.235-7011	Final Scientific or Technical Report	NOV 2004
252.242-7004	Material Management And Accounting System	NOV 2005
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.244-7000	Subcontracts for Commercial Items and Commercial Components (DoD Contracts)	NOV 2005
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

CLAUSES INCORPORATED BY FULL TEXT

52.215-19 NOTIFICATION OF OWNERSHIP CHANGES (OCT 1997)

(a) The Contractor shall make the following notifications in writing:

(1) When the Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could

result in changes in the valuation of its capitalized assets in the accounting records, the Contractor shall notify the Administrative Contracting Officer (ACO) within 30 days.

(2) The Contractor shall also notify the ACO within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.

(b) The Contractor shall--

(1) Maintain current, accurate, and complete inventory records of assets and their costs;

(2) Provide the ACO or designated representative ready access to the records upon request;

(3) Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization, and remaining useful lives are identified accurately before and after each of the Contractor's ownership changes; and

(4) Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.

The Contractor shall include the substance of this clause in all subcontracts under this contract that meet the applicability requirement of FAR 15.408(k).

(End of clause)

52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor within 0 days; provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least 1 day before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed thirty-six (36) months, unless otherwise agreed to between the parties.

52.222-2 PAYMENT FOR OVERTIME PREMIUMS (JUL 1990)

(a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed "zero" or the overtime premium is paid for work --

(1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdowns of production equipment, or occasional production bottlenecks of a sporadic nature;

(2) By indirect-labor employees such as those performing duties in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;

(3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or

(4) That will result in lower overall costs to the Government.

(b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall--

(1) Identify the work unit; e.g., department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;

(2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;

(3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and

(4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.

* Insert either "zero" or the dollar amount agreed to during negotiations. The inserted figure does not apply to the exceptions in paragraph (a)(1) through (a)(4) of the clause.

(End of clause)

52.227-12 PATENT RIGHTS--RETENTION BY THE CONTRACTOR (LONG FORM) (JAN 1997)

(a) Definitions. "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under title 35 of the United States Code or any novel variety of plant that is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321, et seq.).

"Made" when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"Nonprofit organization" means a domestic university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.

"Practical application" means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms.

"Small business firm" means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standards for small business concerns involved in Government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

"Subject invention" means any invention of the Contractor conceived or first actually reduced to practice in the performance of work under this contract; provided, that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d)) must also occur during the period of contract performance.

(b) Allocation of principal rights. The Contractor may elect to retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any

subject invention in which the Contractor elects to retain title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(c) Invention disclosure, election of title, and filing of patent applications by Contractor. (1) The Contractor shall disclose each subject invention to the Contracting Officer within 2 months after the inventor discloses it in writing to Contractor personnel responsible for patent matters or within 6 months after the Contractor becomes aware that a subject invention has been made, whichever is earlier. The disclosure to the Contracting Officer shall be in the form of a written report and shall identify the contract under which the invention was made and the inventor(s). It shall be ~~sufficiently complete in technical detail to convey a clear understanding, to the extent known at the time of the~~ disclosure, of the nature, purpose, operation, and physical, chemical, biological, or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale, or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the Contracting Officer, the Contractor shall promptly notify the Contracting Officer of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the Contractor.

(2) The Contractor shall elect in writing whether or not to retain title to any such invention by notifying the Federal agency at the time of disclosure or within 8 months of disclosure, as to those countries (including the United States) ~~in which the Contractor will retain title; provided, that in any case where publication, on sale, or public use has~~ initiated the 1-year statutory period wherein valid patent protection can still be obtained in the United States, the ~~period of election of title may be shortened by the agency to a date that is no more than 60 days prior to the end of~~ the statutory period.

(3) The Contractor shall file its initial patent application on an elected invention within 1 year after election or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The Contractor shall file patent applications in additional countries (including the European Patent Office and under the Patent Cooperation Treaty) within either 10 months of the corresponding initial patent application or 6 months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure to the Contracting Officer, election, and filing may, at the discretion of the funding Federal agency, be granted, and will normally be granted unless the Contracting Officer has reason to believe that a particular extension would prejudice the Government's interest.

(d) Conditions when the Government may obtain title. The Contractor shall convey to the Federal agency, upon written request, title to any subject invention--

(1) If the Contractor elects not to retain title to a subject invention;

(2) If the Contractor fails to disclose or elect the subject invention within the times specified in paragraph (c) above (the agency may only request title within 60 days after learning of the Contractor's failure to report or elect within the specified times);

(3) In those countries in which the Contractor fails to file patent applications within the time specified in paragraph (c) above; provided, however, that if the Contractor has filed a patent application in a country after the times specified in paragraph (c) above, but prior to its receipt of the written request of the Federal agency, the Contractor shall continue to retain title in that country; or

(4) In any country in which the Contractor decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum rights to Contractor. (1) The Contractor shall retain a nonexclusive, royalty-free license throughout the world in each subject invention to which the Government obtains title except if the Contractor fails to disclose the

subject invention within the times specified in paragraph (c) above. The Contractor's license extends to its domestic subsidiaries and affiliates, if any, within the corporate structure of which the Contractor is a part and includes the right to grant sublicenses of the same scope to the extent the Contractor was legally obligated to do so at the time the contract was awarded. The license is transferable only with the approval of the funding Federal agency except when transferred to the successor of that part of the Contractor's business to which the invention pertains.

(2) The Contractor's domestic license may be revoked or modified by the funding Federal agency to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions in the Federal Property Management ~~Regulations and agency licensing regulations (if any). This license shall not be revoked in that field of use or the~~ geographical areas in which the Contractor has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the funding Federal agency to the extent the Contractor, its licensees, or its domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, the funding Federal agency shall furnish the Contractor a written notice of its intention to revoke or modify the license, and the Contractor shall be allowed 30 days (or such other time as may be authorized by the funding Federal agency for good cause shown by the Contractor) after the notice to show cause why the license should not be revoked or modified. The Contractor has the right to appeal, in accordance with applicable agency licensing regulations and 37 CFR 404 concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of its license.

(f) Contractor action to protect the Government's interest. (1) The Contractor agrees to execute or to have executed and promptly deliver to the Federal agency all instruments necessary to (i) establish or confirm the rights the Government has throughout the world in those subject inventions to which the Contractor elects to retain title, and (ii) convey title to the Federal agency when requested under paragraph (d) above and subparagraph (n)(2) below, and to enable the Government to obtain patent protection throughout the world in that subject invention.

(2) The Contractor agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Contractor each subject invention made under contract in order that the Contractor can comply with the disclosure provisions of paragraph (c) above, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by subparagraph (c)(1) above. The Contractor shall instruct such employees through employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The Contractor shall notify the Federal agency of any decision not to continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than 30 days before the expiration of the response period required by the relevant patent office.

(4) The Contractor agrees to include, within the specification of any United States patent application and any patent issuing thereon covering a subject invention, the following statement: "This invention was made with Government support under (identify the contract) awarded by (identify the Federal agency). The Government has certain rights in this invention."

(5) The Contractor shall establish and maintain active and effective procedures to assure that subject inventions are promptly identified and disclosed to Contractor personnel responsible for patent matters within 6 months of conception and/or first actual reduction to practice, whichever occurs first in performance of work under this contract. These procedures shall include the maintenance of laboratory notebooks or equivalent records and other records as are reasonably necessary to document the conception and/or the first actual reduction to practice of subject inventions, and records that show that the procedures for identifying and disclosing the inventions are followed. Upon request, the Contractor shall furnish the Contracting Officer a description of such procedures for

evaluation and for determination as to their effectiveness.

(6) The Contractor agrees, when licensing a subject invention, to arrange to avoid royalty charges on acquisitions involving Government funds, including funds derived through Military Assistance Program of the Government or otherwise derived through the Government, to refund any amounts received as royalty charges on the subject invention in acquisitions for, or on behalf of, the Government, and to provide for such refund in any instrument transferring rights in the invention to any party.

(7) The Contractor shall furnish the Contracting Officer the following:

(i) Interim reports every 12 months (or such longer period as may be specified by the Contracting Officer) from the date of the contract, listing subject inventions during that period and stating that all subject inventions have been disclosed or that there are no such inventions.

(ii) A final report, within 3 months after completion of the contracted work, listing all subject inventions or stating that there were no such inventions, and listing all subcontracts at any tier containing a patent rights clause or stating that there were no such subcontracts.

(8) The Contractor shall promptly notify the Contracting Officer in writing upon the award of any subcontract at any tier containing a patent rights clause by identifying the subcontractor, the applicable patent rights clause, the work to be performed under the subcontract, and the dates of award and estimated completion. Upon request of the Contracting Officer, the Contractor shall furnish a copy of such subcontract, and no more frequently than annually, a listing of the subcontracts that have been awarded.

(9) In the event of a refusal by a prospective subcontractor to accept one of the clauses in subparagraph (g)(1) or (2) below, the Contractor (i) shall promptly submit a written notice to the Contracting Officer setting forth the subcontractor's reasons for such refusal and other pertinent information that may expedite disposition of the matter and (ii) shall not proceed with such subcontracting without the written authorization of the Contracting Officer.

(10) The Contractor shall provide, upon request, the filing date, serial number and title, a copy of the patent application (including an English-language version if filed in a language other than English), and patent number and issue date for any subject invention for which the Contractor has retained title.

(11) Upon request, the Contractor shall furnish the Government an irrevocable power to inspect and make copies of the patent application file.

(g) Subcontracts. (1) The Contractor shall include the clause at 52.227-11 of the Federal Acquisition Regulation (FAR), suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental, or research work to be performed by a small business firm or nonprofit organization. The subcontractor shall retain all rights provided for the Contractor in this clause, and the Contractor shall not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

(2) The Contractor shall include this clause (FAR 52.227-12) in all other subcontracts, regardless of tier, for experimental, developmental, or research work.

(3) In the case of subcontracts, at any tier, when the prime award with the Federal agency was a contract (but not a grant or cooperative agreement), the agency, subcontractor, and the Contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subcontractor and the Federal agency with respect to those matters covered by this clause.

(h) Reporting utilization of subject inventions. The Contractor agrees to submit on request periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Contractor or its licensees or assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Contractor, and such other

data and information as the agency may reasonably specify. The Contractor also agrees to provide additional reports as may be requested by the agency in connection with any march-in proceedings undertaken by the agency in accordance with paragraph (j) of this clause. To the extent data or information supplied under this paragraph is considered by the Contractor, its licensee or assignee to be privileged and confidential and is so marked, the agency agrees that, to the extent permitted by law, it shall not disclose such information to persons outside the Government.

(i) Preference for United States industry. Notwithstanding any other provision of this clause, the Contractor agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be ~~waived by the Federal agency upon a showing by the Contractor or its assignee that reasonable but unsuccessful~~ efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

(j) March-in rights. The Contractor agrees that with respect to any subject invention in which it has acquired title, the Federal agency has the right in accordance with the procedures in FAR 27.304-1(g) to require the Contractor, an assignee, or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the Contractor, assignee, or exclusive licensee refuses such a request, the Federal agency has the right to grant such a license itself if the Federal agency determines that--

~~(1) Such action is necessary because the Contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;~~

(2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Contractor, assignee, or their licensees;

(3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the Contractor, assignee, or licensees; or

(4) Such action is necessary because the agreement required by paragraph (i) of this clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

(k) Special provisions for contracts with nonprofit organizations. [Reserved]

(l) Communications. All written notifications required by this clause shall be submitted to the Administrative Contracting Officer (ACO). All required reporting shall be accomplished using the i-Edison.gov reporting website (<https://s-edison.info.nih.gov/iEdison/>).

(m) Other inventions. Nothing contained in this clause shall be deemed to grant to the Government any rights with respect to any invention other than a subject invention.

(n) Examination of records relating to inventions. (1) The Contracting Officer or any authorized representative shall, until 3 years after final payment under this contract, have the right to examine any books (including laboratory notebooks), records, and documents of the Contractor relating to the conception or first reduction to practice of inventions in the same field of technology as the work under this contract to determine whether--

(i) Any such inventions are subject inventions;

(ii) The Contractor has established and maintains the procedures required by subparagraphs (f)(2) and (f)(3) of this clause; and

(iii) The Contractor and its inventors have complied with the procedures.

(2) If the Contracting Officer determines that an inventor has not disclosed a subject invention to the Contractor in accordance with the procedures required by subparagraph (f)(5) of this clause, the Contracting Officer may, within 60 days after the determination, request title in accordance with subparagraphs (d)(2) and (d)(3) of this clause. However, if the Contractor establishes that the failure to disclose did not result from the Contractor's fault or negligence, the Contracting Officer shall not request title.

(3) If the Contracting Officer learns of an unreported Contractor invention which the Contracting Officer believes ~~may be a subject invention, the Contractor may be required to disclose the invention to the agency for a~~ determination of ownership rights.

(4) Any examination of records under this paragraph shall be subject to appropriate conditions to protect the confidentiality of the information involved.

(o) Withholding of payment (this paragraph does not apply to subcontracts). (1) Any time before final payment under this contract, the Contracting Officer may, in the Government's interest, withhold payment until a reserve not exceeding \$50,000 or 5 percent of the amount of the contract, whichever is less, shall have been set aside if, in the Contracting Officer's opinion, the Contractor fails to--

~~(i) Establish, maintain, and follow effective procedures for identifying and disclosing subject inventions pursuant to subparagraph (f)(5) above;~~

(ii) Disclose any subject invention pursuant to subparagraph (c)(1) above;

(iii) Deliver acceptable interim reports pursuant to subdivision (f)(7)(i) above; or

(iv) Provide the information regarding subcontracts pursuant to subparagraph (f)(8) of this clause.

(2) Such reserve or balance shall be withheld until the Contracting Officer has determined that the Contractor has rectified whatever deficiencies exist and has delivered all reports, disclosures, and other information required by this clause.

(3) Final payment under this contract shall not be made before the Contractor delivers to the Contracting Officer all disclosures of subject inventions required by subparagraph (c)(1) above, an acceptable final report pursuant to subdivision (f)(7)(ii) above, and all past due confirmatory instruments.

(4) The Contracting Officer may decrease or increase the sums withheld up to the maximum authorized above. No amount shall be withheld under this paragraph while the amount specified by this paragraph is being withheld under other provisions of the contract. The withholding of any amount or the subsequent payment thereof shall not be construed as a waiver of any Government right.

(End of clause)

52.233-4 APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM (OCT 2004)

United States law will apply to resolve any claim of breach of this contract.

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://farsite.hill.af.mil>

(End of clause)

52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.

(b) The use in this solicitation or contract of any Department of Defense Federal Acquisition Regulation Supplement (DFARS) (48 CFR Chapter 2) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

252.204-7006 BILLING INSTRUCTIONS (OCT 2005)

When submitting a request for payment, the Contractor shall--

(a) Identify the contract line item(s) on the payment request that reasonably reflect contract work performance; and

(b) Separately identify a payment amount for each contract line item included in the payment request.

(End of clause)

Section J – List of Documents, Exhibits and Other Attachments

Attachment No. 1

Statement of Work (SOW)

Attachment No. 2

PreContract Cost Agreement

STATEMENT OF WORK

The proposed program will be conducted in two phases: a 12-month Phase I and an 18-month Phase II by Shakti Technologies (Shakti) in collaboration with SRI International (SRI) and the University of Florida.

Phase I will consist of the following tasks:

Task 1.1. (b)(4) fabrication.

We will fabricate a (b)(4) composite plate where (b)(4) (b)(4) to form a (b)(4) interface. The (b)(4) will be packed together and (b)(4). As the projectile penetrates the (b)(4) it will put the (b)(4) against each other in the (b)(4) but any component in the (b)(4) will result in (b)(4) attack. We will initially test (b)(4) commercially available (b)(4). The feasibility of using other materials will be assessed. (b)(4) (b)(4)

We will fabricate the (b)(4) plate from (b)(4). Low cost coating fabrication processes such as (b)(4) will be used for the preparation of these powders. ~~Niobium on alumina and titanium on silicon carbide are candidate materials.~~ The particle size (b)(4) will be optimized, (b)(4) will be used. Plates (up to 6-in x 6-in) will be fabricated from these materials.

Shakti and SRI will be responsible for this Task.

Task 1.2. (b)(4) backplate fabrication and (b)(4) armor assembly

An (b)(4) plate will be fabricated from (b)(4). (b)(4) This lightweight (b)(4) backing layer will provide instant local toughening to absorb the residual energy of the significantly slowed down projectile. (b)(4) structures will be fabricated using SRI's proprietary automated computer controlled fabrication process. This fabrication technique will allow us to quickly optimize the design of the (b)(4) without the need of any molding process since CAD data will be directly used by the. Armor plates (up to 6-in x 6-in) will be assembled by (b)(4).

We will also develop a cost model of the (b)(4) which will account for material cost and projected production cost.

Shakti and SRI will be responsible for this Task.

Task 1.3. Mechanical and ballistic testing

We will perform static and quasi-dynamic mechanical property characterization of individual constituents and behavior of assembled system. Particular attention will be given to the hardness and fracture toughness of the (b)(4) deformation and fracture behavior of individual and assembled (b)(4) (interactions), and (b)(4) characteristics of (b)(4). Microstructural examinations of the constituents will be also made by sectioning, polishing, and etching.

We will characterize the interaction of projectiles (API or 50 caliber FSP) with the proposed armor through the use of high-speed photography. This will allow us to delineate the initial interaction behavior of projectile with the armor (breakup or fragmentation), intermediate behavior (b)(4) (b)(4), and final interaction (slow down and capturing) as an overall performance of armor. We will determine what mechanisms or structures of the proposed armor contribute effectively in

defeating the threat. The experimental findings will be used to assist to develop, validate, and improve finite element models of the armor.

After the sample is shot, (b)(4) fragments will be collected as much as possible, and some of the armor plate itself will be cast in clear epoxy to retain the components in the structure. Then the plates will be sectioned for detailed microscopic examination. We will look for evidence of deformation or fracture associated with the projective and also associated with the interaction with the (b)(4) within the armor system. The delineation of interaction mechanisms and the role of each (b)(4) in defeating the threat will be assessed.

SRI will be responsible for this task.

Task 1.4. Simulation of armor performance

We will develop a prototype three-dimensional finite element model to analyze the response of the armor, which will depend on the characteristics of the loading, the proximity and intensity of the blast to an armor system, and the capacity (b)(4) to resist cratering, spalling, and ultimately breaching by shell fragments. Resulting patterns of failure will be investigated in order to determine the armor thickness required to maintain structural integrity and to prevent local failure. Shear failure before the development of a flexural mode of response associated with a lower ductility and a brittle mode of failure will be investigated. The capability of an armor system to attain its ultimate capacity and to continue to maintain this level of response while deforming plastically will be focused to ensure that the system can withstand large deformation associated with plastic behavior. Section failures of the armor panels will be analyzed with the ductility limits or rotational capacities associated with the material and (b)(4) construction.

Focus in the first phase study will be placed on identifying the material parameters and FEA modeling techniques that capture (b)(4) which most significantly affect armor performance under the combined threats. Once a preliminary finite element model has been developed, parametric sensitivity studies will be conducted to identify the physical phenomena that have the most influence on system behavior.

University of Florida will be responsible for this task.

Phase II will be performed over a period of 18 months and will consist of the following Tasks:

Task 2.1. (b)(4) fabrication.

Based on the best materials and material combinations identified in Phase I, the plate design will be further optimized to minimize areal density and cost. Plate fabrication processes will be scaled up to produce 18-in x 18-in parts.

Production of the (b)(4) will be scaled up to produce kilograms of material. The (b)(4) process will be optimized to achieve the best ballistic properties. The areal density of the plates will be varied by adjusting material selection and composition.

Shakti and SRI will be responsible for this task.

Task 2.2. Back plate fabrication and armor assembly.

Based on Phase I performance and modeling data, we will fabricate back plates with optimized design. Best materials (b)(4) as identified in Phase I, will be used for the fabrication of the (b)(4) back plate. The goal is to minimize the armor areal density while maintaining high level of ballistic protection. The entire armor assembly and the structure) of the individual layers will be optimized through several modeling-fabrication-testing iterations. Areal density will be minimized by adjustment of (b)(4) composition. Fabrication will be scaled up to 18-in x 18-in

Fabrication steps of the entire armor will be optimized consistently with low-cost mass production processes, such as automated (b)(4) processes.

Shakti and SRI will be responsible for this task.

Task 2.3. Mechanical and ballistic testing.

Mechanical and ballistic testing will be performed to iterate the design and fabrication of new improved armor. Characterization of ballistic performance against API rounds and 0.50 cal FSP will be performance for single and multiple shots. Protection areal density (PAD) ballistic testing methods will be employed to map ballistic protection as a function of the armor configuration and ballistic threat.

SRI will be responsible for this task.

Task 2.4. Armor performance simulation

Additional modeling and simulation work will be performed to support armor performance and design. The results obtained from numerical simulations will be compared to testing results and the FEA model will be calibrated. A series of sensitivity studies will be conducted by analyzing the finite model developed for various combinations of material parameters and design parameters. Armor design parameters and ballistic test results will be fed into the model to achieve more accurate representation.

University of Florida will be responsible for this task.

AMENDMENT 3

to

ADVANCE AGREEMENT TO AUTHORIZE INCURRENCE OF PRE-AWARD COSTS UNDER
CONTRACT HR0011-07-C-0012
(formerly HR0011-06-C-0065)

-
- Re: (a) ARPA Order W06400
(b) Shakti Technologies Proposal submitted under Broad Agency Announcement (BAA)06-09
(c) Advance Agreement to Authorize Incurrence of Pre-Award Costs Under Contract
HR0011-06-C-0065, dated 23 JUN 2006
(d) Amendment 1 to Advance Agreement to Authorize Incurrence of Pre-Award Costs Under
Contract HR0011-06-C-0065, dated 29 SEP 2006
(e) Amendment 2 to Advance Agreement to Authorize Incurrence of Pre-Award Costs Under
Contract HR0011-07-C-0012 (formerly HR0011-06-C-0065)
-

The purpose of Amendment 3 is to update the following:

DELETE:

FIRST: In the event that a contract is awarded, pre-award costs, not to exceed \$293,000.00 shall be allowable under the contract, provided that the individual cost elements therein shall be:

- (a) otherwise allowable, reasonable, and allocable;
- (b) incurred no sooner than 22 JUN 2006 or after 22 NOV 2006, and;
- (c) incurred specifically and exclusively to accomplish the work described in the proposal referenced above.

INSERT:

FIRST: In the event that a contract is awarded, pre-award costs, not to exceed \$343,000.00 shall be allowable under the contract, provided that the individual cost elements therein shall be:

- (a) otherwise allowable, reasonable, and allocable;
- (b) incurred no sooner than 22 JUN 2006 or after 29 DEC 2006, and;
- (c) incurred specifically and exclusively to accomplish the work described in the proposal referenced above.

DELETE:

SECOND: Contract specifications and price(s) shall be agreed to by the earlier of:

- (a) the end of the 150 day period beginning on the date of the full signing of this Advance Agreement; or,
- (b) the date on which the amount of funds obligated, committed or expended under this Advance Agreement is equal to no more than \$293,000.00.


Contract Number: HR0011-07-C-0012
Amendment 3 to Advance Agreement to Authorize Incurrence of PreAward Costs
Page 2 of 2

INSERT:

SECOND: Contract terms and conditions shall be agreed to by the earlier of:
(a) 29 DEC 2006; or
(b) the date on which the amount of funds obligated, committed or expended under this Advance Agreement is equal to no more than \$343,000.00.

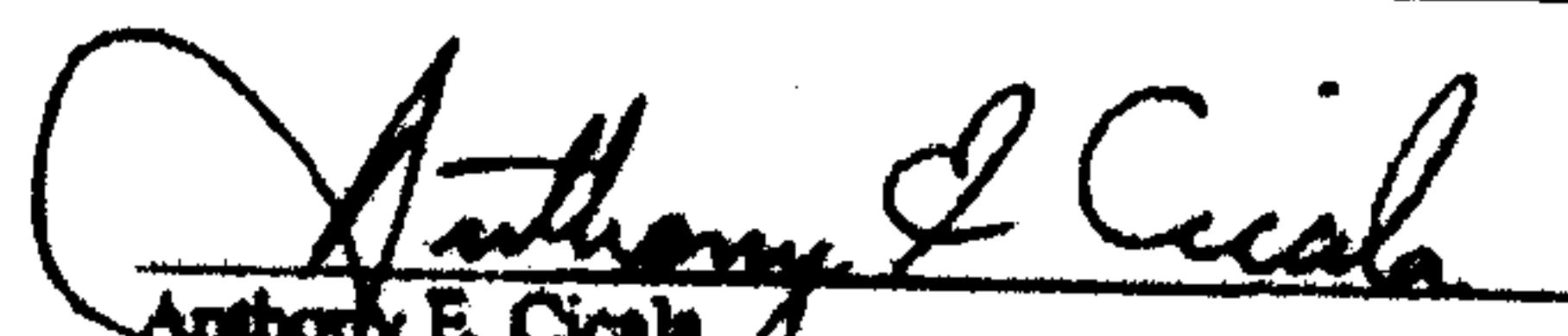
All other terms and conditions remain in effect unless stated otherwise herein.

FOR THE CONTRACTOR:


Subhash Narsing
President and CEO

November 20, 2006
Date

**FOR THE UNITED STATES OF AMERICA
DEFENSE ADVANCED RESEARCH PROJECTS
AGENCY**


Anthony E. Cicala
Contracting Officer

20 NOV 06
Date

AMENDMENT 2

to

ADVANCE AGREEMENT TO AUTHORIZE INCURRENCE OF PRE-AWARD COSTS UNDER
CONTRACT HR0011-07-C-0012
(formerly HR0011-06-C-0065)

Re: (a) ARPA Order W064/00
(b) Shakti Technologies Proposal submitted under Broad Agency Announcement (BAA) 06-09
(c) Advance Agreement to Authorize Incurrence of Pre-Award Costs Under Contract
HR0011-06-C-0065, dated 23 JUN 2006
(d) Amendment 1 to Advance Agreement to Authorize Incurrence of Pre-Award Costs Under
Contract HR0011-06-C-0065, dated 29 SEP 2006

The purpose of Amendment 2 is to update the following:

1) As a result of the not concluding contract negotiations by the end of the government fiscal year, the
contract number is updated as follows:

DELETE: Contract Number HR0011-06-C-0065

INSERT: Contract Number HR0011-07-C-0012

All other terms and conditions remain in effect unless stated otherwise herein.

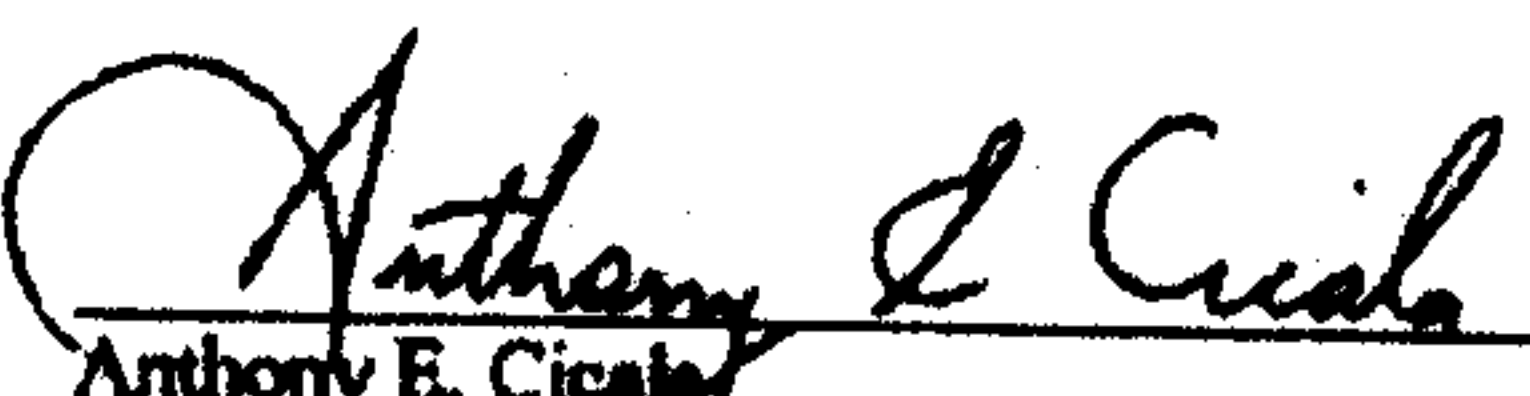
FOR THE CONTRACTOR:


Subhash Narang
President and CEO

October 27, 2006

Date

FOR THE UNITED STATES OF AMERICA
DEFENSE ADVANCED RESEARCH PROJECTS
AGENCY


Anthony E. Cicale
Contracting Officer

27 OCT 06
Date



DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
3701 NORTH FAIRFAX DRIVE
ARLINGTON, VA 22203-1714

**ADVANCE AGREEMENT TO AUTHORIZE INCURRENCE OF PRE-AWARD
COSTS UNDER CONTRACT HR0011-06-C-0065**

Re: (a) DARPA Order No. W064/00
(b) Shakti Technologies
(c) Extension to the Original Pre-Award Cost Agreement dated June 22, 2006

The Contracts Management Office (CMO), Defense Advanced Research Projects Agency (DARPA), has received a valid and properly funded procurement request, reference (a), in support of DARPA's Topologically Controlled Lightweight Armor Program. This request follows upon the receipt of reference (b), its synopsis, and its evaluation in accordance with the FAR at 6.302-1. The award of a Contract (cost) is intended.

Since the Contracting Officer has determined that incurrence of costs before the effective date of the Contract is necessary to ensure compliance with the proposed delivery schedule, the Government and the Contractor agree as follows:

FIRST: In the event a Contract is awarded, pre-award costs, not to exceed \$293,000.00 shall be allowable under the Contract, provided that the individual costs therein shall be:

- (a) otherwise allowable, reasonable, and allocable;
- (b) incurred no sooner than June 22, 2006 or after November 22, 2006; and,
- (c) incurred specifically and exclusively to accomplish work described in the proposal referenced above.

SECOND: Contract specifications and price(s) shall be agreed to by the earlier of:

- (a) the end of the 150 day period beginning on the date of the full signing of this Advance Agreement; or,
 - (b) the date on which the amount of funds obligated, committed or expended under this Advance Agreement is equal to no more than \$293,000.00.
-

THIRD AND FINALLY: It is the intention of the Government to award a Contract to the Contractor, subject to final agreement on contract terms, specifications and price(s), which Contract shall incorporate this Advance Agreement. It is understood and agreed by both parties that this Agreement concerns the treatment of pre-award costs in the event of award of a Contract. This Agreement does not require the Contractor to incur any such costs, and any costs incurred are at the risk of the Contractor, pending the award of a Contract.

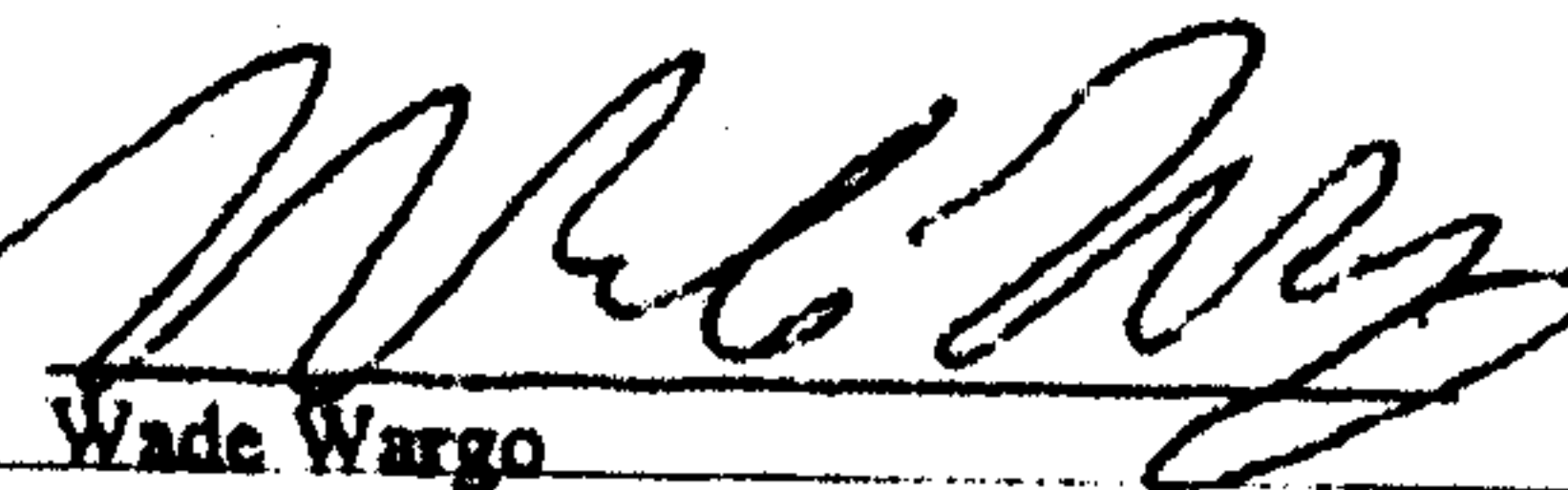
For the Contractor:

Date September 28, 2006


Subhash Narang, President and CEO

For the Government:

Date 9/29/2006


Wade Wargo
Contracting Officer
Contracts Management Office
Defense Advanced Research Projects Agency



DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
3701 NORTH FAIRFAX DRIVE
ARLINGTON, VA 22203-1714

**ADVANCE AGREEMENT TO AUTHORIZE INCURRENCE OF PRE-AWARD
COSTS UNDER CONTRACT HR0011-06-C-0065**

Re: (a) DARPA Order No. W064/00
(b) Shakti Technologies

The Contracts Management Office (CMO), Defense Advanced Research Projects Agency (DARPA), has received a valid and properly funded procurement request, reference (a), in support of DARPA's Topologically Controlled Lightweight Armor Program. This request follows upon the receipt of reference (b), its synopsis, and its evaluation in accordance with the FAR at 6.302-1. The award of a Contract (cost) is intended.

Since the Contracting Officer has determined that incurrence of costs before the effective date of the Contract is necessary to ensure compliance with the proposed delivery schedule, the Government and the Contractor agree as follows:

FIRST: In the event a Contract is awarded, pre-award costs, not to exceed \$293,000.00 shall be allowable under the Contract, provided that the individual costs therein shall be:

- (a) otherwise allowable, reasonable, and allocable;
- (b) incurred no sooner than June 22, 2006 or after September 22, 2006; and,
- (c) incurred specifically and exclusively to accomplish work described in the proposal referenced above.

SECOND: Contract specifications and price(s) shall be agreed to by the earlier of:

- (a) the end of the 90 day period beginning on the date of the full signing of this Advance Agreement; or,
- (b) the date on which the amount of funds obligated, committed or expended under this Advance Agreement is equal to no more than \$293,000.00.



DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
3701 NORTH FAIRFAX DRIVE
ARLINGTON, VA 22203-1714

THIRD AND FINALLY: It is the intention of the Government to award a Contract to the Contractor, subject to final agreement on contract terms, specifications and price(s), which Contract shall incorporate this Advance Agreement. It is understood and agreed by both parties that this Agreement concerns the treatment of pre-award costs in the event of award of a Contract. This Agreement does not require the Contractor to incur any such costs, and any costs incurred are at the risk of the Contractor, pending the award of a Contract.

For the Contractor:

Date June 21, 2006

Subhash Narang, President and CEO

Name and Title

SUBHASH NARANG

SHAKTI TECHNOLOGIES

For the Government:

Date 6/23/06

Donald C. Sharkus

Donald C. Sharkus

Special Assistant

Contracts Management Office

Defense Advanced Research Projects Agency